COMPLETE LISTING OF THE CLAIMS

The following lists all of the claims that are or were in the above-identified patent application. The status identifiers respectively provided in parentheses following the claim numbers indicate the current statuses of the claims.

1. (Previously Presented) A timing system comprising:

at least one semiconductor laser configured to issue subnanosecond optical pulses defining a periodic pulse train;

an optical timing system through which the pulses propagate;

an optoelectronic system coupled to the optical timing system such that the optoelectronic system generates an electronic timing signal based on propagation of the optical pulses through the optical timing system;

a first optical waveguide coupled to the optical timing system, the first waveguide being configured to define a first time-quantifiable optical path for a pulse of the train;

a second optical waveguide coupled to the optical timing system, the second waveguide being configured to define a second time-quantifiable optical path for a pulse of the train different from the first waveguide; and

an optical switching system coupled to direct one of the pulses from the semiconductor laser through the first optical waveguide or the second optical waveguide depending on when another of the optical pulses emerges from the optical timing system.

2. (Previously Presented) The system according to claim 1, further comprising:

a third optical waveguide coupled to the optical timing system and to the optical switching system, the third waveguide being configured to define a third time-quantifiable optical path for a pulse of the train different from the first and second time-quantifiable optical paths, wherein

lengths of the first, second, and third time-quantifiable optical paths have numerical relationships, such that a pulse traversing the first path defines a nominal travel time, a pulse traversing the second path has a travel time lengthened by a specific quantity with respect to the same pulse traversing the first path, and a pulse traversing the third path has a travel time shortened by a specific quantity with respect to the same pulse traversing the first path.

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3. (Canceled)

4. (Canceled)

5. (Previously Presented) The system according to claim 2, further comprising:

a first pulse path for the optical pulses from the semiconductor laser; and

a second pulse path for the optical pulses that have propagated through the optical timing system, wherein

the first and second pulse paths are operationally coupled to the optical switching system, wherein arrival times of pulses on the first and second pulse paths control operation of the optical switching system such that each pulse from the semiconductor laser is directed through the first, second or third time-quantifiable optical path.

6. (Previously Presented) The system according to claim 2, wherein the semiconductor laser develops pulses at a rate defining a time spaced-apart fundamental frequency of the optoelectronic timing system.

7. (Currently Amended) The system according to claim 6, wherein the optical switching system is configured to ~~compare an actual arrival time of an~~ receive a prior optical pulse that has propagated through the optical timing system ~~to an expected arrival time of the optical pulse~~ and to select whether to direct a new one of the optical pulses from the semiconductor laser through the first, second or third time-quantifiable optical path depending on ~~a difference between the actual arrival time and the expected arrival time~~ a synchronization relationship between the prior optical pulse and the new optical pulse.

8. (Canceled)

9. (Previously Presented) In an optoelectronic timing system, an optical compensation method for advancing or retarding an optical pulse within a pre-defined pathway, the method comprising:

configuring at least one semiconductor laser to issue subnanosecond optical pulses defining a periodic pulse train;

configuring a first optical waveguide to define a first time-quantifiable optical path for a pulse of the train;

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configuring a second optical waveguide to define a second time-quantifiable optical path for a pulse of the train different from the first waveguide, wherein the length of the second time-quantifiable optical path has a defined numerical relationship to the length of the first time-quantifiable optical path, such that a pulse traversing the second path has a travel time lengthened by a specific quantity with respect to the same pulse traversing the first path; and

operating an optical switching system to direct one of the optical pulses from the semiconductor laser through the first optical waveguide or the second optical waveguide depending on when another of the optical pulses emerges from the optoelectronic timing system.

10. (Previously Presented) The method according to claim 9, further comprising:

configuring a third optical waveguide to define a third time-quantifiable optical path for a pulse of the train different from the first and second waveguide, wherein:

operating the optical switching system directs each pulse from the semiconductor laser through the first, second, or third optical waveguide depending on when another of the pulses finishes propagating through the optical timing system; and

wherein the length of the third time-quantifiable optical path has a defined numerical relationship to the length of the first and second time-quantifiable optical paths, such that a pulse traversing the first path defines a nominal travel time, a pulse traversing the second path having a travel time lengthened by a specific quantity with respect to the same pulse traversing the first path, and a pulse traversing the third path having a travel time shortened by a specific quantity with respect to the same pulse traversing the first path.

11. (Canceled)

12. (Canceled)

13. (Currently Amended) The method according to claim 10, further comprising:

receiving a first of the pulses on a first pulse path from the optical timing system to the switching system; and

receiving ~~a a second~~ a second of the pulses from the semiconductor laser on a second pulse path to the switching system, wherein operating the switching system is such that arrival

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times of the first and second pulses determine whether the second pulse is directed through the first, second or third time-quantifiable optical path.

14. (Previously Presented) The method according to claim 9, wherein the semiconductor laser develops pulses at a rate defining a time spaced-apart fundamental frequency of the system.

15. (Currently Amended) The ~~system~~ method according to claim 14, ~~wherein~~ further comprising:

receiving at the optical switching system ~~is configured to compare an actual arrival time of an~~ a prior optical pulse that has propagated through the optical timing system; ~~to an expected arrival time of the optical pulse~~ and

selecting whether to direct a new one of the optical pulses from the semiconductor laser through the first, second or third time-quantifiable optical path depending on ~~a difference between the actual arrival time and the expected arrival time~~ a synchronization relationship between the prior optical pulse and the new optical pulse.

Claims 16-23 (Canceled)

24. (Previously Presented) The system of claim 1, wherein the optoelectronic system comprises a photodiode.

25. (Previously Presented) The system of claim 1, wherein the optical switching system switches an input path for the optical pulses from the semiconductor laser to the optical timing system.

26. (Previously Presented) The system of claim 25, wherein the optical switching system switches the input path to the optical timing system on relative timing of the optical pulses from the semiconductor laser relative to optical pulses that have propagated through the optical timing system.

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